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**CLAIMS:**

1. A method for forming an abutment for interfacing a dental prosthesis to a dental implant or a duplicate thereof inserted into a patient's jaw or a model thereof, the method comprising:

5 positioning or assuming a pre-fabricated dental prosthesis in the patient's jaw or the model thereof so that it is properly matched to the patient's dentition thus defining an unknown and arbitrary spatial disposition between the dental prosthesis and the dental implant; and

subsequently constructing an abutment to match the spatial disposition between  
10 the dental implant and the dental prosthesis.

2. A method for forming an abutment for interfacing a dental prosthesis to a dental implant or a duplicate thereof inserted into a patient's jaw or a model thereof, the method comprising:

removably and reproducibly attaching to the dental implant or said duplicate an  
15 intra-implant element that is or may be bonded to an intra-crown element via a resilient bonding material so as to form a deformable connection between the intra-crown element and the intra-implant element;

adjusting the intra-crown element relative to the intra-implant element so as to form a model abutment that is properly adjusted to the dental implant or said duplicate  
20 and is properly positioned to receive a dental prosthesis;

removing the model abutment from the dental implant or said duplicate without deforming the model abutment; and

using the model abutment to form a permanent abutment.

3. The method according to claim 2, further including strengthening said  
25 connection so that removal of the model abutment from the dental implant or said duplicate does not deform the model abutment.

4. The method according to claim 3, wherein strengthening said connection includes curing the resilient bonding material so as to render it no longer deformable.

5. The method according to any one of claims 2 to 4, further including reinforcing  
30 the connection.

6. The method according to claim 5, wherein the reinforcing is effected by applying an additional bonding material.
7. The method according to claim 5 or 6, wherein the reinforcing is effected by means of mechanical reinforcements within the bonding material.
- 5 8. The method according to any one of claims 2 to 5, wherein the intra-crown element and the intra-implant element are separate units.
9. The method according to any one of claims 2 to 5, wherein the intra-crown element and the intra-implant element are pre-joined by a resilient joint.
- 10 10. The method according to any one of claims 2 to 5, wherein the resilient joint includes a deformable membrane that encloses the intra-crown element and the intra-implant element and is amenable to curing.
11. The method according to any one of claims 2 to 5 and 10, wherein the resilient joint includes a mechanical connection that is amenable to bending and elongation and compression.
- 15 12. The method according to any one of claims 2 to 11, wherein the resilient bonding material is contained within a pliable membrane that permits the resilient bonding material to be matched to an internal contour of the intra-crown element and to an external contour of the intra-implant element.
13. The method according to any one of claims 2 to 12, further including using the model abutment as a temporary abutment.
- 20 14. The method according to any one of claims 2 to 13, wherein using the model abutment to form a permanent abutment includes providing a bore through either the model abutment or the permanent abutment for accommodating a screw therethrough.
15. The method according to any one of claims 2 to 14, further including perfecting the connection between the intra-implant element and the intra-crown element.
- 25 16. The method according to claim 15, wherein perfecting the connection between the intra-implant element and the intra-crown element is performed on the model abutment.

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17. The method according to claim 15, wherein perfecting the connection between the intra-implant element and the intra-crown element is performed on the permanent abutment.

18. The method according to claim 17, wherein perfecting the connection between  
5 the intra-implant element and the intra-crown element and using the model abutment to form a permanent abutment include:

forming the intra-crown element and the intra-implant element of a durable material; and

rendering permanent the connection between the intra-crown element and the  
10 intra-implant element in the model abutment.

19. A method for forming a pre-fabricated dental prosthesis that is suited for fitting via an abutment to a dental implant without requiring precise knowledge of a location and orientation of the dental implant in a patient's mouth, the method comprising:

obtaining a model of the patient's mouth, said model having embedded therein  
15 an adapter that is configured for removably fitting thereto an intra-crown element replicate that is adapted for precise fitting to the adapter so that when a dental prosthesis is fitted on to the intra-crown element replicate, the dental prosthesis will be properly and reproducibly located in the model of the patient's mouth;

in respect of each dental prosthesis that is to be pre-fabricated, inserting a  
20 respective intra-crown element replicate into a respective adapter; and

using the respective intra-crown element replicate as a template for forming a dental prosthesis that may subsequently be fitted on to an abutment formed according to any one of claims 2 to 18.

20. The method according to claim 18, wherein the adapter has a female connector  
25 for accommodating therein a male connector fitted to the intra-crown element replicate.

21. The method according to claim 18, wherein the adapter has a male connector for fitting into a female connector within the intra-crown element replicate.

22. A method for fitting into a patient's mouth a dental prosthesis that is pre-fabricated according to any one of claims 18 to 21 and is adjusted for proper positioning  
30 in the patient's mouth, said method comprising:

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removably inserting an intra implant element into a dental implant within the patient's jaw such that its location and orientation within the dental implant is precise and reproducible;

fixing the dental prosthesis to a matching intra-crown element corresponding to the intra-crown element replicate on which the dental prosthesis was fabricated;

applying a resilient bonding material to the intra implant element and/or the intra-crown element;

maintaining the dental prosthesis and attached intra-crown element in proper position in the patient's mouth;

bonding the intra-crown element to the intra-implant element via the resilient bonding material so as to form a deformable connection between the intra-crown element and the intra-implant element;

adjusting the intra-crown element relative to the intra-implant element so as to form a model abutment that is properly adjusted to the dental implant and to the dental prosthesis;

strengthening said connection so that removal of the model abutment and attached dental prosthesis from the dental implant does not deform the model abutment;

removing the model abutment and attached dental prosthesis from the dental implant; and

perfecting the connection between the intra-implant element and the intra-crown element.

23. A method for forming a pre-fabricated dental prosthesis that is suited for fitting via at least two abutments to respective dental implants without requiring precise knowledge of a location and orientation of the dental implants in a patient's mouth, the method comprising:

forming a model of the patient's mouth, said model having embedded therein one or more adapters jointly configured for removably fitting thereto at least two intra-crown element replicates that are adapted for precise fitting to the adapter so that when a dental prosthesis is fitted on to the intra-crown element replicates, the dental prosthesis will be properly and reproducibly located in the model of the patient's mouth;

in respect of each dental prosthesis that is to be pre-fabricated, inserting respective intra-crown element replicates into a respective adapter or adapters; and

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using the respective intra-crown element replicates as common template for forming a dental prosthesis that may subsequently be fitted on to two or more abutments formed according to any one of claims 2 to 18.

24. The method according to claim 23, wherein each adapter has at least one female connector for accommodating therein a respective male connector fitted to the intra-crown element replicate.

25. The method according to claim 23, wherein each adapter has at least one male connector for fitting into a respective female connector within the intra-crown element replicate.

26. A method for fitting into a patient's mouth a dental prosthesis that is pre-fabricated according to any one of claims 23 to 25 and is adjusted for proper positioning in the patient's mouth, said method comprising:

removably inserting a respective intra implant element into at least two dental implants within the patient's jaw such that its location and orientation within the respective dental implant is precise and reproducible;

fixing the dental prosthesis to at least two matching intra-crown elements each corresponding to a respective one of the intra-crown element replicates on which the dental prosthesis was fabricated;

applying a resilient bonding material to the intra implant elements and/or the intra-crown elements;

maintaining the dental prosthesis and attached intra-crown elements in proper position in the patient's mouth;

bonding each intra-crown element to the respective intra-implant element via the resilient bonding material so as to form a deformable connection between each intra-crown element and the respective intra-implant element;

adjusting each intra-crown element relative to the respective intra-implant element so as to form a respective model abutment that is properly adjusted to the respective dental implant and to the dental prosthesis;

strengthening said connections so that removal of the model abutments and attached dental prosthesis from the dental implant does not deform the model abutments;

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removing the model abutments and attached dental prosthesis from the dental implants; and

perfecting the connections between the intra-implant elements and the respective intra-crown elements.

5 27. The method according to claim 22 or 26, wherein strengthening said connection or connections includes curing the resilient bonding material so as to render it no longer deformable.

28. The method according to any one of claims 22, 26 or 27, wherein strengthening said connection or connections includes applying additional bonding material.

10 29. The method according to any one of claims 22 to 24 and 26 to 28, further including using the or each model abutment to form therefrom a respective permanent abutment.

30. A method for forming a pre-fabricated dental prosthesis that is suited for fitting via an abutment to a dental implant without requiring precise knowledge of a location and orientation of the dental implant in a patient's mouth, the method comprising:

15 obtaining a model of the patient's mouth, said model having embedded therein an adapter that is configured for removably fitting thereto an intra-crown element replicate that is adapted for precise fitting to the adapter;

creating *in situ* in said model an imitation dental prosthesis of each dental prosthesis that is to be pre-fabricated or an imitation infrastructure thereof on which the dental prosthesis can be subsequently constructed;

generating a 3-D computer construction of each imitation dental prosthesis or imitation infrastructure;

20 using the 3-D computer construction to generate the dental prosthesis or the respective infrastructure thereof from which the dental prosthesis may be formed and to generate a respective intra-crown element for preparing an abutment according to any one of claims 2 to 18 that is suited to said dental prosthesis.

31. The method according to claim 30, further including using the 3-D computer construction to generate a respective intra-crown element replicate and an adapter for  
30 mating thereto.

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32. A method for preparing a crown for fitting to a naturally devitalized tooth, the method comprising:

making an accurate model of the tooth and associated root canal or root canals;  
using the model to prepare the crown being properly matched to a remaining  
5 peripheral contour of the tooth so that the crown may subsequently be supported on one or more posts cemented within respective root canals of the tooth.

33. The method according to claim 32, further including using the model to prepare an intra-crown element corresponding to said crown; and

bonding the crown to the intra-crown element so as to form a combined crown  
10 and intra-crown element that may subsequently be supported on one or more posts cemented within respective root canals of the tooth.

34. The method according to claim 33, including forming in the crown a bore that is aligned with a corresponding aperture in the intra-crown element, said bore and said aperture being located so that, in use, they serve as a window for directing light  
15 therethrough for curing the composite within the combined crown and intra-crown element.

35. A method for forming a base of a dental prosthesis for attaching to a dental implant or a duplicate thereof inserted into a patient's jaw or a model thereof, the method comprising:

20 removably and reproducibly attaching to the dental implant or said duplicate an intra-implant element that is or may be bonded to an intra-crown element via a resilient bonding material thereby forming said base having a deformable connection between the intra-crown element and the intra-implant element;

adjusting the intra-crown element relative to the intra-implant element so that  
25 the base is properly adjusted to the dental implant or said duplicate and is properly positioned to receive a dental prosthesis;

strengthening said connection so that removal of the base from the dental implant or said duplicate does not deform the base;

removing the base from the dental implant or said duplicate;

30 perfecting the connection between the intra-implant element and the intra-crown element; and

using the base to form a permanent base for supporting the dental prosthesis.

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36. The method according to claim 35, wherein using the base to form a permanent base includes providing a bore through the base for accommodating a screw therethrough.

37. An abutment prepared according to any one of claims 1 to 36.

5 38. An abutment prepared for interfacing a dental prosthesis to a dental implant or a duplicate thereof inserted into a patient's jaw or a model thereof, so as to allow the dental prosthesis to be esthetically and functionally supported via the abutment while defining an arbitrary and unknown spatial disposition between the dental implant and the dental prosthesis, the abutment comprising:

10 an intra-implant element bonded to an intra-crown element via a resilient bonding material so as to form a deformable connection that is matched to the spatial disposition between the dental implant and the dental prosthesis and is subsequently strengthened.

39. The abutment according to claim 38, constituting a model abutment for  
15 preparing a permanent abutment therefrom.

40. The abutment according to claim 38, wherein the connection is perfected and rendered permanent so as to form a permanent abutment.

41. A kit or a component thereof for preparing an abutment for interfacing a dental prosthesis to a dental implant or a duplicate thereof inserted into a patient's jaw or a  
20 model thereof, the kit comprising the following components:

a plurality of intra-implant elements each adapted for removably and reproducibly attaching to a different dental implant or duplicate; and

a plurality of intra-crown elements suited for different sizes and morphologies of teeth to be reconstructed, each of the intra-crown elements being adapted for a  
25 respective dental prosthesis and each being suited for bonding to any one of said intra-implant elements via a resilient bonding material so as to form a model abutment that is properly adjusted to a selected dental implant or said duplicate corresponding to a selected intra-implant element and is properly positioned to receive a dental prosthesis;

whereby the dental prosthesis may be secured to a permanent abutment formed  
30 from the model abutment.



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42. The kit according to claim 41, further including:  
a plurality of intra-crown element replicates each adapted for precise fitting to a respective adapter and being configured for fitting to the intra-crown element replicate a dental prosthesis so as to properly and reproducibly locate the dental prosthesis in a model of the patient's mouth containing one or more said adapters.
43. The kit according to claim 42, further including at least one of said adapters.
44. The kit according to claim 42 or 43, wherein the adapter is a universal adapter that is configured for use with all of the intra-crown elements.
45. The kit according to any one of claims 41 to 44, further including a plurality of copings each having an internal hollow that is of complementary shape to an external contour of a respective one of the intra-crown elements.
46. The kit according to claim 45, wherein the coping is formed of any material in the group of: wax, acryl, gold, non-precious metal, porcelain, zirconia, alumina and any other material suitable for forming a dental prosthesis.
47. The kit according to any one of claims 41 to 46, further including a plurality of temporary crowns each adapted for fitting to a respective intra-crown element replicate.
48. The kit according to any one of claims 41 to 47, further including a plurality of porcelain crowns each adapted for fitting to a respective intra-crown element replicate and serving as a base for an ideal prosthesis by post modification.
49. The kit according to any one of claims 41 to 48, further including a globule of resilient bonding material contained within a pliable membrane that permits the resilient bonding material to be matched to an internal contour of the intra-crown element and to an external contour of the intra-implant element.
50. A component of the kit according to any one of claims 41 to 49, said component being any one or more from the group of: intra-implant element, intra-crown element, intra-crown element replicate, adapter, universal adapter, coping, temporary crown, porcelain crown and globule of resilient bonding material contained within a pliable membrane.